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In the Supreme Court of the United States

OCTOBER TERM, 1948.

Nos. 184 and 185

GRAVER TANK & MFG. CO., INC.,
THE LINCOLN ELECTRIC COMPANY,
GRAVER TANK & MFG. CORPORATION,
Petitioners,

vs.

THE LINDE AIR PRODUCTS COMPANY,
Respondent.

ON WRITS OF CERTIORARI TO COURT OF APPEALS FOR SEVENTH CIRCUIT.

PETITIONERS' REPLY BRIEF.

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December 31, 1948.

THE GATES LEGAL PUBLISHING CO., CLEVELAND, OHIO—MAIN 8847

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PETITIONERS' REPLY BRIEF.

Respondent, as its brief discloses, seeks to save its patent on two grounds:

1. Concurrent findings. Linde says "Both courts unanimously held in favor of plaintiff on all basic questions of invention and patentability and infringement" (respondent's brief, p. 3 *et passim*). The stubborn fact is that of the 23 claims in issue, 19, including all of the process claims and all but four of the flux claims, were found invalid by the trial court.

2. Performance. Jones, it is said, produced results unknown before. Granting that much—although, as will be pointed out, the comparisons with the old have lost nothing in the telling—the inquiry remains: Does Linde practice what the *patent* teaches?

These matters—and others—will be seen in their proper perspective when examined in the light of the issues on which this case turns. Thus:

I. PROCESS CLAIMS INVALID.

To practice what one preaches is a virtue; in patent law it is a necessity.

The patent teaches substitution for the welding arc, as the heating instrumentality, of a fused or molten pool of "conductive melt" operating like hot butter—and just as effectively—to melt the steel; what Linde practices, and has been given by the judgments below, is the sheathed-submerged-enclosed arc claimed in the initial application and then abandoned when the Patent Office cited Robinoff.

1. Sheathed Arc, Abandoned, Cannot Now Be Re-Claimed.

Linde's brief is directed primarily toward recapture of the arc.

—(a) Patent Issued Only upon Outright Disclaimer of Arc as Heat Source.

To get the patent the arc was disowned (see petitioners' opening brief, pp. 12-19).

Linde asserts the contrary.

The inventors "frankly told the Patent Office," says Linde (respondent's brief, pp. 74-5), "that an arc may be defined so as to encompass their new welding" and that:

> "Only after that frank statement were the process claims allowed by the Patent Office" (respondent's brief, p. 75).

This is not so.

The statement (quoted on p. 74 of respondent's brief) that the inventors had "contemplated the possibility" of an arc in their process was made in prosecuting the *second* application (R. 1089).

That was on November 2, 1934.

The response of the Patent Office to that "frank" disclosure was to *deny* the process claims:

"as fully anticipated by Robinoff" (R. 1095).

That was on March 23, 1935.

It was only when the patentees returned with a fresh application—the *third* one—in which they unequivocally disclaimed the arc as the heating medium, that the patent issued. That was on November 23, 1935—more than a year after the "frank" disclosure which brought, not issuance of the patent, but denial. The patentees then said—in their third and successful application:

> "this case presents a basically novel inventive concept which runs throughout the claims, unifies them * * *.
>
> The basically novel concept is in fusion welding by deposition from an electrode, using an electric current as the source of heat, **without the use of a gas-conducted arc.**[1] Hitherto it has never occurred to any-

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[1] Emphasis of the words "without a gas-conducted arc" appears in the original. Respondent's suggestion that the patentees disowned only the "usual" type of arc (respondent's brief, pp. 69, 71-2) trifles with words. By definition, an arc is a discharge of electric current through a gaseous or vaporous medium (R. 235). As the Court put it in *Union Carbide Co. v. American Carbide Co.* (N. D., N. Y., 1909), 172 Fed. 136, affirmed per curiam (2 C. C. A., 1910), 181 Fed. 111, in the electric arc (p. 142):

> "the current is carried * * * through an open space by some gaseous vapor, and not * * * by some other substance offering resistance * * *"

Similarly, here, the trial court noted:

> "conduction of electric energy in an ionized element which is in a gaseous or vaporized state is common to all electric arcs" (R. 911).

Linde does not dispute this. It says:

> "The word 'arc' means simply electric conduction in a vaporous or gaseous medium" (respondent's brief, p. 31).

It should be noted also that when Linde describes its process as "ensheathing a vapor core or arc no bigger than the tip of the little finger" (respondent's brief, pp. 20-1) there is nothing unique about the size of the arc. That is the usual size of the welding arc (R. 116, 818-9).

one that such a thing would be even possible of attainment, as is witnessed by the immense amount of effort put into the development of *arc* welding.

Applicants have found that their concept may be practically attained through the use of a conductive, *high-resistance* melt of nonmetallic material which * * * *supplies the welding heat*" (third application, R. 1130-1).[2]

This was the process on which the patent issued (see petitioners' opening brief, pp. 12-19, 33-5, and appendix pp. 71-3).

But the process so described is not and cannot be practiced. The trial court appraised it in these words:

"To make a claim for a welding process in which these erroneous ideas are incorporated is to stake out a process or means of welding **which does not in point of fact exist** within the invention" (R. 915).

Recognizing this, Linde must re-claim the arc. Otherwise it cannot charge infringement by Lincoln. The arc, therefore, is now openly avowed (respondent's brief, pp. 20-1, 34-5, 65-7).

—(b) Devices Chosen to Restore Arc Distort Clear Language Used In Patent Claims.

It is not enough to claim the arc by brief. Language to fit must be found in the patent. For this Linde has several answers.

—The "Import" Argument.

The trial judge found:

"The import of each of these claims is that the sole conductive medium through which the electric current passes from the electrode to the base metal is the welding composition which is in a molten state *and that the electric arc phenomenon is not present*" (R. 915, 925, Finding 16).

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[2] Except as otherwise noted, emphasis supplied throughout.

That is precisely what the claims do say. That is what the patent teaches.

Linde, however, concentrates its fire on the word "sole."[3] Linde has hit the wrong target. By concentrating on the word "sole" Linde misses—or seeks to divert attention from—the real point of the finding that the process as patented, as distinguished from that practiced, is one where:

> "no electric arc phenomenon is present" (R. 925, Finding 16).

The argument thus assumes that the court, within the four corners of the patent, found an arc forming *one* route of the "dual" path. It did not (R. 925, Finding 16). It found the arc only in the process as practiced; but since that is not the process claimed *in the patent* the court held the patent in this respect invalid.

—The "Fluid" Argument.

Linde finds the arc (respondent's brief, pp. 69-71) in the word "fluid" in the specification which says the electric current superheats the molten metal and welding composition:

> "making them highly *fluid*" (patent, R. 958, col. 1, lines 27-31).

Then, asserting that "fluid" means "liquid" *or* "gaseous" (respondent's brief, p. 71), Linde restores the arc to the patent. It thus has a "conductive melt" with a hole, or core, in which to insert the arc. The patent, however, shows that the word "fluid" was *not* so used; it was used as a synonym for *liquid* (see petitioners' opening brief, pp. 37-44).

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[3] Linde says the word "sole" is not in the claims. And so Linde argues the electric current travels a dual path, partly through the arc and partly through the "melt" (respondent's brief, pp. 32-4, 67). The "dual path" evidence of Doan the trial court rejected (R. 909-10). It was not urged to the Court of Appeals.

—The "Contact" Argument.

For an alternative ground, Linde says the arc is not important anyway. It "is a man of straw" (respondent's brief, p. 34). "Contact is the key" (respondent's brief, pp. 34-6, 72-3). "That is the common denominator of the process claims" (respondent's brief, p. 35).

The "common denominator" is a variable. Note that:

In seeking the patent it was not "contact" with a mantle of molten flux enclosing an arc in the vaporous core, which set the patent apart. The "basically novel inventive concept which runs throughout the claims, [and] unifies them," the Patent Office was told, was not "contact," but welding:

> "**without** the use of a gas-conducted arc" (third application, R. 1130).

In the patent specification advising the public that "We have discovered a novel" welding process, the "contact" on which all now is made to turn, is not mentioned (patent, R. 956, col. 1, lines 20-37). What *is* mentioned is a "welding composition having appropriate electrical *resistance* properties," coupled with the unequivocal assertion that "The heat thus generated * * * provides heating means" (Id).

The sole purpose of "contact" in the claims where it is mentioned[4] *is to maintain the electric circuit* "comprising said electrode, fused material, and work piece" (R. 959, claim 7) **and thus avoid the formation of an arc.** If physical contact is not maintained, the circuit is either broken or an arc is formed. Both of these the patent wishes to *avoid*.

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[4] I.e., claims 1, 3-7, 15. "Contact" is not mentioned in the other 10 process claims.

"Contact," it is said, is demonstrated in the folded photograph which closes respondent's brief. What the photograph shows is that the process as practiced *violates the patent*. The weld there pictured starts with an arc; it ends with an arc. The photograph demonstrates that so long as flux is absent, or insufficient to exclude the air, the weld is porous; when the flux is sufficiently deep to protect the metal, the weld is sound. But it is still an *arc* from beginning to end.

What Linde needs to show to live by the patent—and cannot—is that at the midpoint the arc vanishes *and is replaced by* the fused or molten pool of conductive melt acting as a resistor which the patent teaches.

—Submerged Arc Denied to Robinoff.

Not only must Linde, to prevail, restore the arc to its own patent, but, to escape anticipation, it must also dispose of Robinoff.

For this Linde's answer is to *deny* to Robinoff the submerged arc (respondent's brief, appendix pp. ix and iii).

Thus, the arc has now come full circle.

Before the Patent Office the patentees distinguished the prior Robinoff by denying *they* utilized the submerged arc; now they distinguish Robinoff on the ground *he* has no submerged arc. Although Robinoff, as used at Western Pipe & Steel Co., where the patentees started their work, was described as a process with the flux:

> "entirely covering the arc from the atmosphere" (R. 879),

and although the patentees in their initial application said that in Robinoff:

> "The process is such that the operator cannot see the progress of the weld, the arc being submerged in the fluxing material" (first application, R. 1045),

respondent Linde, in an effort to save the patent, now says:

> "Robinoff did not have a 'submerged arc'" (respondent's brief, appendix, pp. ix and iii).

The discovery comes late. It would more appropriately have been disclosed:

When the Patent Office challenged the initial application, because it claimed what Robinoff already had. The invention then was described as "a new method, designated as *submerged-arc* electric welding" (first application, R. 1046, see petitioners' opening brief, pp. 12-9). Instead of pointing out then that Robinoff had no submerged arc, the patentees "radically" distinguished all prior processes (third application, R. 1132, see petitioners' opening brief, p. 16) by substituting for the arc as the heating instrumentality a molten pool of conductive melt described as a "welding composition having appropriate electrical resistance properties" which "provides heating means" (see patent, R. 956, col. 1, lines 28-35; R. 958, col. 1, lines 51-3).

When the owners of Robinoff on August 1, 1936—two months after the patent issued—charged Linde with infringement (Defts. Exh. 96, R. 425, 419). Instead of meeting that challenge by pointing out Robinoff had no submerged arc, Linde took a license under Robinoff on April 1, 1938[5] (Defts.

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[5] This was no token license. For the use of Robinoff, Linde agreed (Defts. Exh. 97, paragraph 2, R. 425, 419) to pay 1¾¢ per pound of metal deposited by Linde or its sublicensees. On the same day, by separate instrument (Defts. Exh. 97A, R. 425, 419) the parties agreed the fee should not exceed 17½% of the aggregate fees charged by Linde to its licensees. Upon the advent of renegotiation this was reduced on September 25, 1942, by agreement reciting that, since Linde had reduced its fees from 10¢ to 5¢ per pound, the owners of Robinoff thereafter would require payment of only ½¢ per pound (Defts. Exh. 97C, R. 425, 419). Respondent now boasts of its "enlightened" policy of paying the inventors 20%, that is, $1,200,000 out of $6,000,000 collected from the public—up to the time of this suit (respondent's brief, pp. 17, 83). According to its license agreement, Linde paid

(*Continued on following page*).

Exh. 97, R. 425, 419). Thereafter it was Robinoff that headed the list of "patent rights" Linde purported to grant (R. 422).

The short answer to Linde's late discovery that Robinoff had no submerged arc is in the trial court's finding that *except for the flux* Robinoff and Jones as practiced are the same. Said the trial court:

> "there is no difference between the arc in the Jones *et al.* process and any other arc" (R. 911).

The only difference is in the flux. Said the court:

> "It is evident that the welding composition discovered by the inventors is the heart of the invention" (R. 915).

The "distinctive characteristics," said the court, "can be attributed only to the peculiar properties of the welding composition which is employed. The mechanical operational steps involved are identical with those used by Robinoff. Indeed, the patentees who started out with the teachings of Robinoff merely sought an improved welding composition or flux to be used with his [Robinoff's] operational method" (R. 911-2). And so the court found:

> "The composition * * * is the essential feature of the invention" (R. 925, Finding 15);
>
> "the only novelty presented by the process of the patent resides in the use [in Robinoff] of a different welding composition" (R. 927, Finding 27; R. 925, Finding 15; R. 924, Finding 7; R. 915).

(Continued from preceding page)

the owners of Robinoff between 10% and 17½%, or something between $600,000 and $1,050,000.

Linde now says "The only part of the Robinoff process practiced by those licensees [Linde's] was placing a flux on the work to be welded" (respondent's brief, appendix, p. xii). If so, that money should have been paid to Lincoln, for it was the J. C. Lincoln patent (R. 961) which for the first time taught laying the flux on the seam.

In face of the finding that what the inventors found was a new flux *for use in the Robinoff process*, Linde now says (respondent's brief, p. 38):

> "Both [courts below] determined that the invention in suit included new compositions of material *for use in the Jones et al. process* (Finding No. 7, R. 924; R. 1002)."

Finding 7, cited by Linde as its authority, is exactly to the contrary. Finding 7 says:

> "Jones *et al.* invented an improved welding composition usable in the operational **method of electric welding taught by Robinoff**" (R. 924).

Thus, in Linde's mind, the regrant of Robinoff is complete.

—(c) Improved Performance Results Solely from Use in Robinoff of Better Flux.

The improved "performance", on which Linde counts to save its patent, results from the use in Robinoff of the flux the inventors discovered. The trial court so found[6] (R. 925, Finding 9). The Court of Appeals did not say anything to the contrary.

Robinoff, it is important to note, did not patent a flux. As practiced, he utilized clay (i.e., an aluminum silicate flux) with which Linde finds much fault. But that flux was no part of his patent. What Robinoff patented was

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[6] This flux, Unionmelt 20, is described in claims not charged as infringed (see petitioner's opening brief, pp. 52-3 and note 26, p. 52). Although the trial court traced Linde's "commercial success" to Unionmelt 20, "containing a major proportion of calcium silicate" (R. 925, Finding 9) Linde hints it derived *another* flux, Unionmelt 90, from this patent (respondent's brief, pp. 15, 42). The trial court did not so find, nor did the Court of Appeals. Unionmelt 90 was not derived from this patent; it was developed years later (R. 835), and violates the patent's express terms in that it contains many times the 1% to 8% of alumina, preferably 4% to 6%, tolerated by this patent (R. 956, col. 2, lines 16-8; R. 815, 835, 838-40).

"*a method of welding*" (Defts. Exh. 103, R. 975) in deep flux, which came generally to be known as "submerged arc" welding[7] (see petitioner's opening brief, pp. 10-11).

What the inventors did was to find a better flux for use in the Robinoff process. The need for a better flux Linde itself acknowledged when, long prior to this litigation, in the article published by it in the Welding Handbook (Pltf. Exh. 163, R. 356) it said:

> "The method of smothered *or submerged arc welding* did not obtain wide use. No one had given the process a thorough and comprehensive scientific study *to the end of developing satisfactory fluxes* * * *."

For the difficulty the inventors encountered with the clay flux, and sought to cure in the use of the Robinoff process at Western Pipe & Steel Co., respondent gives the clue in calling this "high water mark" (respondent's brief, p. 5). Precisely. Water was the difficulty. The clay, or aluminum silicate, there in use *contained 8.94% water* (Pltf. Exh. 128, R. 31, 879, 881). This water exploding into steam under the heat of the arc could only result in the "pyrotechnics" Linde attributes to Robinoff (respondent's brief, p. 11).

Robinoff, however, in preparing the flux at the National Tube plant *heated* it. As Robinoff made plain (R. 514-5):

---

[7] As Robinoff put it (R. 494):

> "We discovered time and again that, with the clay-scale combination, the arc wasn't visible. It was a startling discovery for us.
>
> The Court: The what wasn't visible?
>
> The Witness: The arc wasn't visible to the naked eye.
>
> We looked at the ammeter; we looked at the volt meter. They registered, and so apparently something was going on underneath. Then the arc will pop out—'Pop' is that correct English? * * * Then it would disappear again, and so it went on.
>
> Our man in the mill called it the submarine arc. That was the name we used, 'submarine.' Here we see it, here you don't. On top of the water you see it, underneath the water you don't; submarine arc."

"Q. Why did you heat the clay?

A. Because clay contains moisture, and we intended to dry the moisture out of the clay, and this was part and parcel of the performance of the pulverizer, to grind and heat at the same time. * * *

We introduced later on a separate heating device, which was a little drum, heated, where we placed our mixture, the complete mixture, from the tumbling barrel, and heated it again, to the extent as it appeared to me, that it entered solid into the kiln, and came out, as it appeared to me, just visually, fluid-like, because it always moved in a pan.

Q. By 'fluid,' Mr. Robinoff, you don't mean in a molten state, not melted?

A. No, it wasn't molten, sort of water-like. It *seeks its own level in a pan*, and from there it was placed in little buggies, carried along the corridor, or rather a platform along the thirty welding machines, and deposited in each boot to be used on the welding machines."

Of course a flux bearing water will produce unsatisfactory welds. It exposes the molten metal to the air. But misuse does not condemn the Robinoff process.[8] For that matter, "It is immaterial that his structure for using the method was neither the best possible nor as skilfully designed or used as that later employed by Smith." *Smith v. Hall* (1937), 301 U. S. 216, 232.

The inventors themselves recognized that clay (aluminum silicate) used as a flux must be free of water. This is shown by their description of the prior art as set forth in the specification. "The flux used in this [Robinoff] system" they say "has been a natural clay" of which they give a "typical analysis" *which shows no water whatever* (patent, R. 955, col. 2, lines 23-38).

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[8] For the quality of the Robinoff weld the 1000 miles of pipe produced by that process (R. 521) and the rigorous tests to which it was subjected are witness (R. 517-21, Defts. Exh. 117A, B, and C, R. 526, 902).

But when respondents demonstrated Robinoff's method for the trial court, they did it with a clay *containing 7.5% water* (Pltf. Exh. No. 151, R. 230, 883). As Kennedy testified (R. 126):

> "Q. At Western Pipe, did they heat the clay first before they used it?
>
> A. Generally.
>
> Q. It was not done out here, was it?
>
> A. I believe that it was *not* done in this particular operation, no, sir."

The patentees' own notes show that when they heated the clay to the melting point, thus eliminating the water, the results were not poor—they were good. Using flux No. 21, in Test No. 138, they reported "No holes. High penetration" (Defts. Exh. 88, R. 425, 1153, 1206, 1207).

What the inventors found was a flux for use in the Robinoff process. They defined it in claims not charged as infringed. With this they produced improved results.

However, in appraising the "performance"—resulting from a new flux in an old process—on which almost alone Linde now asks that its sweeping patent be sustained, it is important to bear in mind that these patentees *did not invent automatic welding.* That was old before these patentees appeared on the scene. Comparisons between *hand* welding and *automatic* welding processes[9] with which Linde's brief abounds (respondent's brief, pp. 22-9) are

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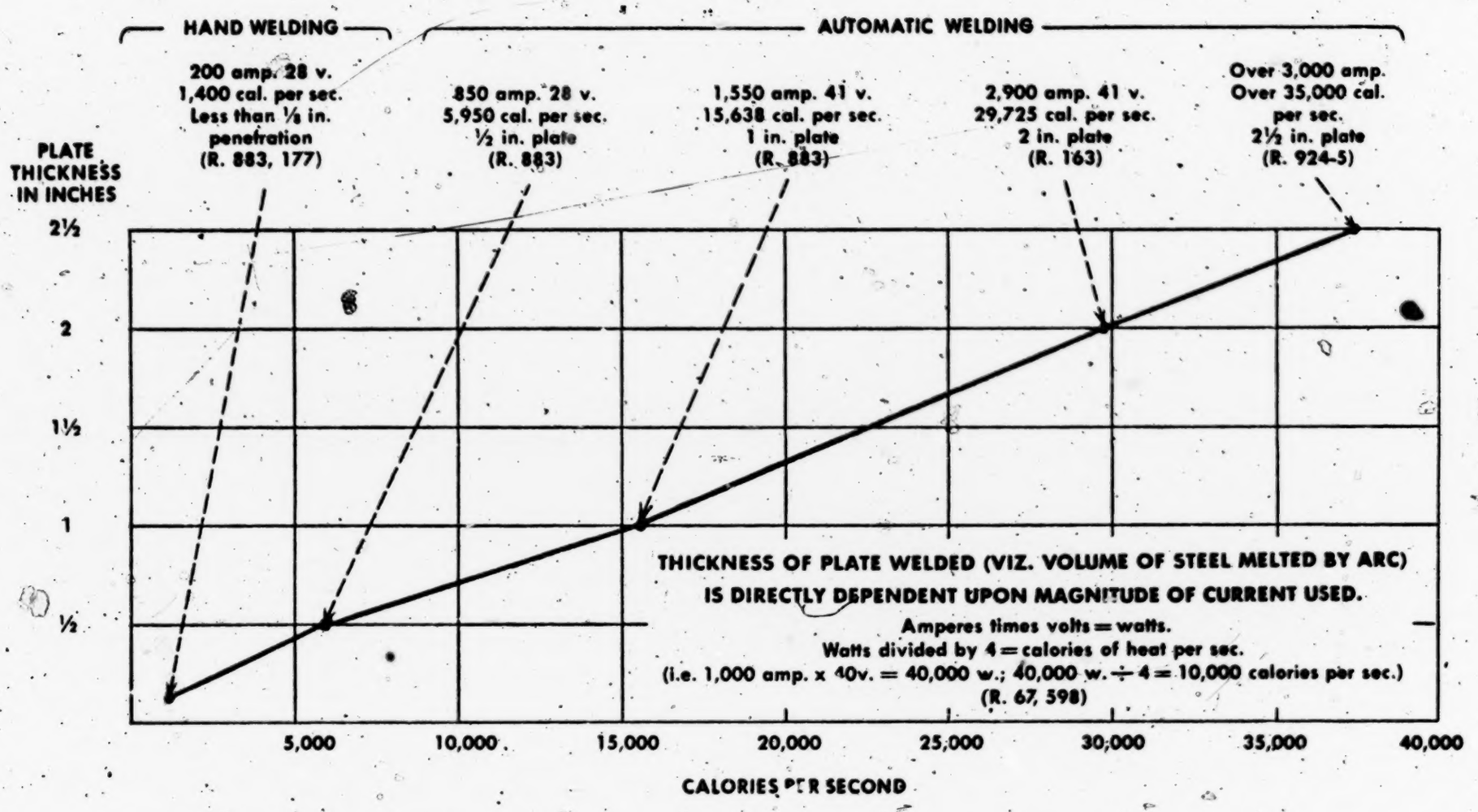
[9] It does not strengthen this patent to point out that an *automatic* process will turn out "six times as much weld as a *hand* welder" (respondent's brief, p. 25). The Jones process is *not* a substitute for hand welding. As Linde recognizes, 90% of all welding is still hand welding, which in no way utilizes Linde's process whether called Jones or Robinoff (respondent's brief, p. 9). Although Linde claims to have reduced the time of ship construction from 12 months to three (respondent's brief, p. 26) the reduction in time arises from many things including the change from riveting to welding (R. 363) and the substitution of automatic welding for hand welding (R. 359). At that, more than 50% of the welding on a ship is still hand welding (R. 363).

therefore less enlightening than Linde would have it appear. Moreover, note that:

Speed of 120 inches per minute, which Linde points to, is on thin sheets (12 gauge, or only 1/10 inch thick, R. 397) with an automatic process (respondent's brief, p. 22). Of course, "Their method of welding differs" as the trial court put it "from electric arc *hand* welding" (R. 907). The ten inches now attributed to Robinoff was on heavy plate (R. 884). When Linde chose to compare the Jones flux with Robinoff's clay flux, both were used to weld one-half inch plates. The speed for *both* was 16 inches per minute (Plaintiff's demonstration No. 7, R. 210). As Linde concedes "The rate of welding depends on the magnitude of the current" (respondent's brief, p. 21). A given number of calories will melt a given amount of steel.

Thickness of plates welded is a manifestation of the truth that the volume of steel melted by the arc is directly dependent upon the magnitude of the current used. The amount of steel melted depends on the calories expended. (See respondent's brief, footnote, p. 20.) This is illustrated in the diagram on the facing page. Increase in current used to suit a particular job is not invention. Robinoff, because his pipe mill called for 5/16 inch plate (R. 508), used 700 amperes, which was what he needed to melt plate of that thickness (R. 540). The Western Pipe machines had a capacity of 800 amperes (R. 879). The capacity of Lincoln machines is 1200 amperes (Pltf. Exh. 203, p. 23, R. 369). Increase in amperes calls for a bigger machine, but is scarcely invention. As the Court noted in *Railroad Supply Company v. Elyria Iron & Steel Company* (1917), 244 U. S. 285, 292,


HAND WELDING
AUTOMATIC WELDING
200 amp. 28 v.
1,400 cal. per sec.
Less than ⅛ in.
penetration
(R. 883, 177)
850 amp. 28 v.
5,950 cal. per sec.
½ in. plate
(R. 883)
1,550 amp. 41 v.
15,638 cal. per sec.
1 in. plate
(R. 883)
2,900 amp. 41 v.
29,725 cal. per sec.
2 in. plate
(R. 163)
Over 3,000 amp.
Over 35,000 cal.
per sec.
2½ in. plate
(R. 924-5)
PLATE
THICKNESS
IN INCHES
2½
2
1½
1
½
THICKNESS OF PLATE WELDED (VIZ. VOLUME OF STEEL MELTED BY ARC)
IS DIRECTLY DEPENDENT UPON MAGNITUDE OF CURRENT USED.
Amperes times volts = watts.
Watts divided by 4 = calories of heat per sec.
(i.e. 1,000 amp. x 40v. = 40,000 w.; 40,000 w. ÷ 4 = 10,000 calories per sec.)
(R. 67, 598)
5,000
10,000
15,000
20,000
25,000
30,000
35,000
40,000
CALORIES PER SECOND

"carrying forward of the original thought, a change only in form, proportions, or degree, doing the same thing in the same way, by substantially the same means, with better results, is not such an invention as will sustain a patent." The problem in any case is to provide a flux that will properly shield the molten metal and thereby produce "welds of the highest quality," and this is the same regardless of the thickness of plate being welded.

In short, what respondent's war born commercial success shows is successful appropriation of Robinoff.

2. If Arc Restored, Patent Still Invalid; It Makes No Disclosure of Sheathing.

Granting all Linde says, the patent fails for want of disclosure of any means or mode of operation, whether new or not, to effect the sheathing of the arc (see petitioners' opening brief, pp. 44-6).

Whatever else it may do, the claim must define novelty. But the "sheathed arc," now hailed as the novel contribution, is nowhere mentioned in the specification *or* the claims. Much less is there disclosure of any mode or means of operation to accomplish the sheathing—except to follow Robinoff.

3. Since Patent's Sole Novelty Resides in Flux, Constituents Must Be Defined.

Because the patentees have claimed a "basically novel," but nonexistent, method of welding "without the use of a gas-conducted arc" all of the process claims are invalid. The claims are also invalid on another ground.

They are invalid because, as to the "essential feature of the invention" (R. 925, Finding 15), the claims, except for those not in issue, which do define the composition the

inventors discovered—are *silent* (see petitioners' opening brief, pp. 46-50). To comply with the statute, "the sole novelty" must be "particularly" pointed out and "distinctly" claimed.

Linde's answer, and that of the Court of Appeals, is to refer to the specification, but all that supplies—even when read with the "five musts," of which there will be a word later—is a list of nine silicates, "a number" of which, used in various combinations in undisclosed proportions, the inventors have found "more or less efficacious" (R. 956, col. 1, lines 62-75).

II. FLUX CLAIMS NEITHER VALID NOR INFRINGED.

The inventors, having described their discovery, whether patentable or not (see petitioners' opening brief, p. 52, note 26), in claims not charged as infringed, should be confined to their discovery.

1. Flux Claims Invalid—Claim of Prior Art Reversal Unsupported.

With respect to the flux claims, Linde's chief answer is that the prior art taught "more gas" whereas these patentees taught "no gas." Theirs is called "the very antithesis of all prior art welding" (respondent's brief, pp. 13, 30, 51-4).

All arc welding proceeds in a vaporous or gaseous medium. Without it there would be no arc (see p. 3, note 1, *supra*). It is not gas, but the *kind* of gas which is important. Air is a gas and its presence is detrimental. On the other hand, inert gases are beneficial because they exclude the air. However, it is not true that until these inventors appeared "All progress in welding had been along the lines of producing more and more gas" (respondent's brief, p. 13). The view that the "prior art disclosures * * * depended on the evolution of more gas" is solely that

of the Court of Appeals (R. 1002). Not only is this finding of the Court of Appeals without record support, it is denied by the record. Note that the:

Trial court entertained no such views about the prior art.

Patentees in the specification of the patent, regarded by Linde as "a most complete disclosure of the prior art" (respondent's brief, p. 7), gives no hint that the prior art teaching was confined to the "evolution of more gas."

Prior art patents included in this record, covering fluxes, contain no materials designedly incorporated in the flux to generate gases (Defts. Exhs. 144, 145, R. 720, 1335-54), and many expressly teach the elimination of gas (see petitioners' opening brief, pp. 60-2).

In the case of one type of coated electrodes, materials designed to generate inert gases to further shield the arc zone have been included along with slag-producing silicates (R. 444). However, this does not mean that all the prior art taught "gas." It did not. The Indians of *Leatherstocking* always traveled single file; but this does not mean everyone in a queue is an Indian.

Profusion the patentees did teach. But, so did many others before them (see petitioners' opening brief, pp. 60-2).

—Silicate Claims Too Broad.

The "silicate" claims (claims 24 and 26) cannot be justified as mere shorthand for the nine metallic silicates named in the specification (respondent's brief, pp. 40, 91, 93). The fact that "metallic silicates" were claimed in one and "silicates" in the other demonstrates the intent to *expand* the claims.

But, says Linde (brief, p. 93) "Each [of the nine] had been proved to operate successfully in the patent in suit (Opinion, R. 917; Finding No. 10, R. 925)."

This is not so.

What the trial court said was that the patentees, by their description of the nine as "more or less efficacious," *meant* that "a number" of these will accomplish the objective of the patent (R. 917). Finding 10, however, shows that "number" to be three—out of the nine—namely, calcium, magnesium, and barium (R. 925, Finding 10), and Finding 13 (R. 925) adds a fourth, manganese. Finding 10 names strontium as also operative, but this is not in the list of nine (R. 956, col. 1, lines 62-4).

As Finding 17 shows, "Many silicates, even many metallic silicates, are inoperative" (R. 926: see also petitioners' opening brief, pp. 65-6). Respondent's brief, appendix, page xx, fails to recall that Dr. Booth found iron and sodium silicates—which are included in the nine—wholly unsatisfactory as fluxes (R. 652-4), thus confirming the patentees' notes. His conclusions stand unrebutted in the record.

The "five musts" (respondent's brief, p. 39) define results. Actually they are an enumeration of characteristics recognized long before the patentees as desiderata in a welding composition.[10] In any case, the question remains, What are the means whereby these desiderata are achieved? And,

[10] This is evidenced by the following substantially identical statement in the prior Miller patent No. 1,741,031 (Defts. Exh. 145, p. 1, lines 24-54, R. 1347):

> "The following are the desirable qualities of a flux for most welding operations. The flux should melt readily and its surface tension when molten should be such that it will readily adhere to the work as the latter is heated, instead of falling away or being blown away. A dense and quiet liquid will be more stable in the welding position than a very thin or frothy liquid, and the flux should therefore produce a liquid of this nature. As the temperature is increased toward the welding point the fluidity of the molten flux should not become so great as to cause undue difficulty in holding it where desired. The flux should be substantially non-volatile at the welding temperature and furthermore should not evolve such quantities of gases, as by decomposition of its constituents or reaction among them, that the flux puffs or froths away from the sur

(Continued on following page)

unless those means are clearly disclosed in the description and properly defined in the claims, the mere statement of what the patentee seeks to accomplish, avails nothing.

—Alkaline Earth Claims Too Broad.

Petitioners, along with the public generally, have the unquestioned right to assume that claims to a composition "containing a major proportion of alkaline earth metal silicate"[11] do *not* include manganese silicate as the major constituent, where manganese admittedly is not an alkaline earth metal (see petitioners' opening brief, pp. 55-6).

It makes no difference that in the descriptive part of the specification manganese is found in the list of nine which in unstated proportions "in binary and ternary combinations" are "more or less efficacious." Quite aside from the proper interpretation to be placed on such description (see petitioners' opening brief, p. 58), the claims are *explicit*.

2. Flux Claims Not Infringed—Issue Does Not Turn on Source of Accused Flux.

Linde's response to the infringement issue (petitioners' brief, pp. 57-67) is that Lincoln derived its manganese silicate flux from the patent (respondent's brief, pp. 3, 45).

Denied—but, if so, the point is immaterial. Either the Lincoln manganese infringes or it does not. If it does not,

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(Continued from preceding page)

face of the molten metal. A flux of these properties will afford a protective blanket of maximum efficacy for the molten metal, and will protect the metal from oxidation throughout the entire temperature range where protection is desirable. The flux should also be a good solvent for metal oxide which may be produced in spite the protective action of the flux, and of course should add no deleterious ingredient to the fused metal and should evolve no fumes offensive to the welder."

[11] The alkaline earth metals are calcium, magnesium, barium and strontium (R. 925, Finding 11). Manganese is not an alkaline earth metal (R. 925, Finding 12).

its derivation from the patent would not convert it into infringement; if it does, independent inspiration would not save it.[12] The very purpose of the patent law, in requiring the inventor to:

> "file in the Patent Office a written description * * * in * * * full, clear, concise, and exact terms * * * and * * * particularly point out and distinctly claim the * * * invention" (35 U. S. C. 33)

is to separate that which he may legally monopolize from that which lies in the public domain.

CONCLUSION.

The patent is invalid.

The Trial Court correctly held all of the process claims and three of the composition claims invalid. Its decision should be reinstated.

The holding of validity and infringement of the four alkaline earth metal silicate claims should be reversed.

Respectfully submitted,

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December 31, 1948.

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[12] "If what the defendant is doing infringes, plaintiff should have its decree no matter whether defendant thought it up independently or got the idea from plaintiff's patent. If, on the other hand, what it does does not infringe, the fact that a knowledge of plaintiff's patent started defendant on the search for a device of its own will not entitle plaintiff to a decree." *Eastman Oil Well Survey Co. v. Sperry-Sun Well Surveying Co.* (5 C. C. A., 1942), 131 F. (2d) 884, 887. *F. N. Burt Co., Limited v. W. C. Ritchie & Co.* (E. D. N. Y., 1918), 251 Fed. 909, 921.